Validation and improvement of a rear-end conflict prediction model

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Abstract: Traffic conflict is an important parameter for the safety evaluation of signalized intersections. A major drawback of traffic conflict is that it is complex, and highly trained personnel are needed to collect the relevant data. In a previous work, a one-variable regression model was reported for predicting rear-end conflict: conflicts/hour = 0.0115 (number of stops/hour). This model was limited to four-legged signalized intersections with left-turn bays in Al-Khobar, Saudi Arabia. The model was successfully validated via this study. It was also shown that the predictive power of the model can be dramatically improved by adding the mean speed to the number of stops. Specifically, the best model with which to predict conflict was found to be conflict = -6.64 + 0.0066 (number of stops) + 0.1737 (mean speed). It was also shown that TRANSYT-7F is a promising tool for facilitating the prediction of conflict. In a small-scale experiment, the simulated stops obtained through the TRANSYT-7F software were successfully used in lieu of the observed stops for predicting rear-end conflict.